Hanover built a first of its kind index to diagnose the health, trends, and hidden opportunities for the fast-growing auto care industry.
The Auto Care Association provides advocacy, educational, networking, technology, market intelligence, and communications resources to a $300 billion network of independent manufacturers, distributors, repair shops, marketers, and retailers nationwide. A steady pillar of the U.S. economy, Auto Care comprises 500,000 businesses and serves 212 million licensed drivers and their 265 million vehicles.

THE CHALLENGE

The Auto Care Association lacked a clear way to capture the health of the auto care market and get ahead of trends. Committed to its members, the Auto Care Association envisioned an unprecedented industry index robust enough to be continuously benchmarked against established indices such as the Standard & Poor’s 500 (S&P 500) and the Dow Jones Industrial Average (DJIA). Hanover supplied the analytical manpower to build it – the Auto Care Industry Index (ACII) and accompanying markets revenue, consumer confidence, and employment sub-indices.

CLIENT INSIGHT

“We value Hanover’s ability to thoroughly contemplate our research questions and execute sophisticated and innovative methodologies that best support our organization’s strategic direction and product division. We view Hanover as a partner in our thought leadership and look forward to working with them on an ongoing basis.”

Behzad Rassuli
Vice President, Market Intelligence
Auto Care Association

To create this new Auto Care Industry Index and facilitate industry evaluations for years to come, Hanover’s methodological experts collaborated with the Auto Care Association - step by step - to select, adjust, and statistically test robust industry performance indicators.
TO IDENTIFY WHAT FACTORS AFFECT THE AFTERMARKET INDUSTRY AND WHY, HANOVER PERFORMED DESCRIPTIVE STATISTICS ON AUTO-RELATED DATA

THE PROCESS

To build a robust index, Hanover used 11 years of Auto Care Association-measured data to identify the following eight indicator variables related to the automotive aftermarket:

- Consumer confidence
- Aftermarket employment
- Vehicle maintenance and repair
- Gasoline price
- Miles driven
- Total light vehicle sales
- Average age of vehicles on the road
- Trailing 12-month revenue

GAS PRICE’S RELATIONSHIP TO U.S. DRIVING ACTIVITY

**Gasoline Price** – Hanover used various descriptive statistics to evaluate and select indicator variables. For example, with gasoline price data, a correlation analysis revealed that higher gasoline prices lead to less driving and, ultimately, fewer automotive aftermarket expenditures.
TO REDUCE REDUNDANCY AMONG SELECTED INDICATOR VARIABLES, HANOVER CONDUCTED CORRELATION ANALYSES ON VARIABLES

THE PROCESS

In considering all possible automotive aftermarket indicators, Hanover wanted to verify that the selected sample was diverse enough to capture all industry nuances. To reduce redundancy among variables, Hanover analyzed correlations between variable pairs.

METHODOLOGICAL SNAPSHOT

Hanover analyzed correlations between all permutations of selected indicators to ensure that no two variables were too similar. Using correlation coefficients, Hanover removed redundant variables while keeping the indicator that is most closely related to the automotive aftermarket.

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</tbody>
</table>

*note: correlations are stronger as "r" value approaches 1*
To bolster the Index’s accuracy, Hanover made adjustments that allow select variables to better support the Index.

The Process

Hanover recognized that select indicator variables are subject to irregularities that can affect an index’s accuracy. Analysts evaluated all indicator variables selected for the Auto Care Industry Index and made the following necessary adjustments:

- Invert Gas Prices – The inverse of gas price allows changes in the variable to positively indicate aftermarket industry behavior.
- Seasonally Adjust Miles Driven – This adjustment accounts for weather-driven fluctuations.
- Extrapolate Monthly Average of Vehicle Age – With a limited range of yearly vehicle age data, Hanover inferred monthly average ages and forecast ages for a missing 16-month period.

Methodological Snapshot

Seasonally Adjusting Miles Driven – To prevent seasonal trends from overpowering other indicators, Hanover seasonally adjusted the “miles driven” indicator variable. This adjustment followed two steps:

1. Determine a monthly index of miles driven relative to the annual average (e.g., .91 for winter months and 1.8 for summer).
2. Apply average index to the miles in the corresponding months (e.g., adjust miles driven by 9% more for winter months).
TO ENSURE THAT THE MOST IMPORTANT INDICATORS HAVE A HIGHER INFLUENCE ON THE INDEX, HANOVER STANDARDIZED AND WEIGHTED SPECIFIC VARIABLES

THE PROCESS

To create an index that can be benchmarked against the S&P 500 and DJIA, Hanover executed the following final operations before completing the Auto Care Industry Index:

- **Standardize Indicators** – This operation removed specific units (e.g. miles) from the index, facilitating cross-index comparison.

- **Weight Indicators** – The Auto Care Association polled industry experts on their perceived levels of importance of each indicator variable, and Hanover assigned weights based on these survey results.

METHODOLOGICAL SNAPSHOT

Weight Indicators – The Auto Care Industry Index is a weighted average of all the indicators’ standardized values. Hanover derived these weights from the Auto Care Association’s poll of industry experts, which asked them their perceived level of importance for each of the eight indicator variables.
Hanover’s analyses resulted in an index designed to inform industry decision-making and capable of comparison to time-tested indices. The most recent index, published in the Auto Care Association’s 2015 “State of the Auto Care Industry Report” finds that:

- The automotive aftermarket industry is not countercyclical and is more stable than the S&P and DJIA indices.
- The industry employment index is more stable than BLS indices for construction and retail.
- The Auto Care Business Confidence Index is more stable than the Auto Care Economic Confidence Index.

**FROM THE EXPERT**

“Our team of quantitative analysts approached the Auto Care Association’s research questions creatively and tactfully, resulting in a robust index unprecedented in the automotive aftermarket industry.”

**Anirban Ghosh**

Quantitative Research Manager, Hanover Research
ABOUT HANOVER RESEARCH

Hanover Research provides high-quality, custom research and analytics through a cost effective model that helps clients make informed decisions, identify and seize opportunities, and heighten their effectiveness.

HANOVER’S CORE CAPABILITIES

**PRIMARY RESEARCH**
Survey design, administration, and analysis; qualitative data coding; in-depth interviews; online focus groups; benchmarking.

**SECONDARY RESEARCH**
Market segmentation and evaluation; labor and demographic trends and forecasts; vendor and product reviews; best practices reports.

**DATA ANALYSIS**
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**GRANT DEVELOPMENT**
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